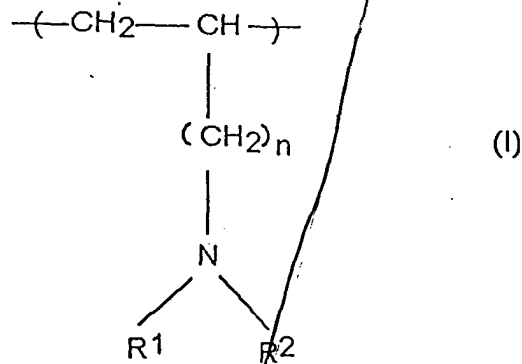


C1 Sub,  
Cont. D1  
cont.

tension modifier, a hydrotropy agent, a humectant, a pH adjustor, an antimold, a chelating agent, a preservative and a rust preventive; the cationic, water-soluble resin comprising a repeating unit represented by the following formula (I):



wherein R<sup>1</sup> and R<sup>2</sup> which may be the same or different represent a hydrogen atom or a C<sub>1-5</sub> alkyl group, provided that R<sup>1</sup> and R<sup>2</sup> do not simultaneously represent a hydrogen atom; and

n is 0, 1, or 2.

Claim 24. The ink composition according to claim 23, wherein the cationic, water-soluble resin has an average molecular weight of 300 to 10,000.

Claim 25. The ink composition according to claim 23, wherein the cationic, water-soluble resin is an acid addition salt.

Claim 26. The ink composition according to claim 23, which comprises the base.

Claim 27. The ink composition according to claim 26, wherein the base is a hydroxide of an alkali metal or an alkaline earth metal.

Claim 28. The ink composition according to claim 23, wherein both  $R_1$  and  $R_2$  in the repeating unit represented by the formula (I) represent a methyl group.

Claim 29. The ink composition according to claim 23, wherein  $n$  is 1.

Claim 30. The ink composition according to claim 23, wherein the water-soluble organic solvent has a lower vapor pressure than water.

Claim 31. The ink composition according to claim 23, wherein the water-soluble organic solvent is contained in an amount of 5 to 50% by weight based on the total amount of the ink.

Claim 32. The ink composition according to claim 23, wherein the colorant is a dye or a pigment.

Claim 33. The ink composition according to claim 23, which comprises the nonionic, water-soluble resin.

Claim 34. An ink set comprising a first ink composition or a group of first ink compositions and a second ink composition or a group of second ink compositions,

C1  
cont

the first ink composition being the ink composition according to claim 23,  
the second ink composition being an ink composition comprising an anionic  
material.

Claim 35. The ink set according to claim 34, wherein the group of first ink  
compositions comprises a yellow ink, a magenta ink, and a cyan ink and  
the second ink composition is a black ink.

Claim 36. The ink set according to claim 34, wherein the first ink composition is  
a black ink and the second group of ink compositions comprises a yellow ink, a  
magenta ink, and a cyan ink.

Claim 37. The ink set according to claim 34, wherein the anionic material  
contained in the second ink composition is an anionic, water-soluble resin.

Claim 38. The ink set according to claim 37, wherein the second ink composition  
comprises a pigment.

Claim 39. The ink set according to claim 34, wherein the anionic material in the  
second ink composition is a pigment having an anionic functional group on its  
surface.

Claim 40. A recording method comprising the step of: depositing an ink

Q1  
Cont.  
composition according to claim 23 onto a recording medium to form an image on the recording medium.

Claim 41. The ink composition according to claim 23, wherein the penetration accelerator is a lower alcohol, a cellosolve, a carbitol, or a surfactant.

Claim 42. The ink composition according to claim 41, wherein the lower alcohol is ethanol, isopropanol, butanol, or pentenol.

Claim 43. The ink composition according to claim 41, wherein the cellosolve is ethylene glycol monobutyl ether.

Claim 44. The ink composition according to claim 41, wherein the carbitol is diethylene glycol monobutyl ether, or triethylene glycol monobutyl ether glycol ether.

Claim 45. The ink composition according to claim 23, wherein the surface tension modifier is diethanolamine, triethanolamine, an alcohol, or a nonionic, cationic, anionic or amphoteric surfactant.

Claim 46. The ink composition according to claim 45, wherein the alcohol comprises glycerin and diethylene glycol.

Claim 47. The ink composition according to claim 23, wherein the hydrotropy

Ch 1  
Cont.

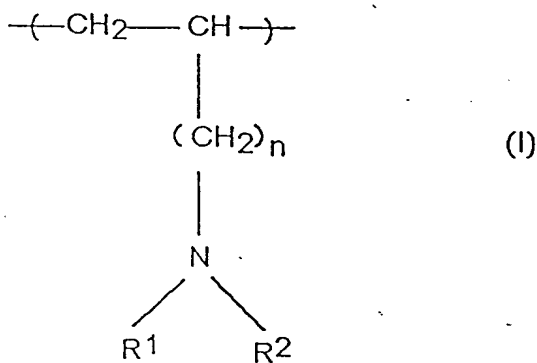
agent is alkylurea, ethyleneurea, propyleneurea, thiourea, a guanidine acid salt, or a tetraalkylammonium halide.

Claim 48. The ink composition according to claim 23, wherein the humectant is glycerin, diethylene glycol or a saccharide.

Claim 49. The ink composition according to claim 48, wherein the saccharide is maltitol, sorbitol, gluconic lactone, or maltose.

Claim 50. An ink set consisting essentially of a black ink, a yellow ink, a cyan ink, and a magenta ink, said black, yellow, cyan, and magenta inks each independently consisting essentially of an alkali-soluble colorant, a water-soluble organic solvent, water, a cationic water-soluble resin and, optionally, one or more of a base, a nonionic water-soluble resin and an assistant selected from the group consisting of a penetration accelerator, a viscosity modifier, a surface tension modifier, a hydrotropy agent, a humectant, a pH adjustor, an antimold, a chelating agent, a preservative and a rust preventive;

the cationic, water-soluble resin comprising a repeating unit represented by the following formula (I):



CI Cont.  
wherein  $R^1$  and  $R^2$  which may be the same or different represent a hydrogen atom or a  $C_{1-5}$  alkyl group, provided that  $R^1$  and  $R^2$  do not simultaneously represent a hydrogen atom; and

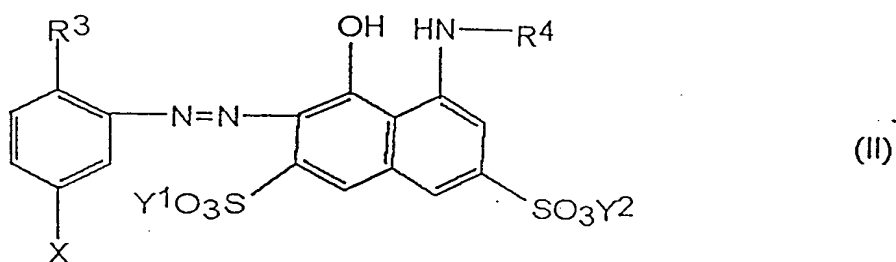
$n$  is 0, 1, or 2,

wherein the alkali-soluble colorant for the black ink is selected from the group of dyes consisting of C.I. Direct Black 19, 35, 154, 168, 171, and 195 and C.I. Food Black 2,

the alkali-soluble colorant for the yellow ink is selected from the group of dyes consisting of C.I. Direct Yellow 50, 55, 86, 132, 142, and 144 and C.I. Acid Yellow 23,

the alkali soluble colorant for the cyan ink is selected from the group of dyes consisting of C.I. Direct Blue 86, 87, and 199 and C.I. Acid Blue 9 and 249,

the alkali soluble colorant for the magenta ink is selected from the group of dyes consisting of C.I. Direct Red 9 and 227, C.I. Acid Red 52 and 289, and dyes represented by the following structural formula (II):



wherein  $R^3$  and  $R^4$  represent a hydrogen atom, a  $C_{1-5}$  alkyl group, an aryl group, a  $C_{1-5}$  alkoxy group, or a phenoxy group or a derivative thereof, a triazine ring

or a derivative thereof, a carboxyl group or a salt thereof, or a sulfonyl group or a derivative thereof;

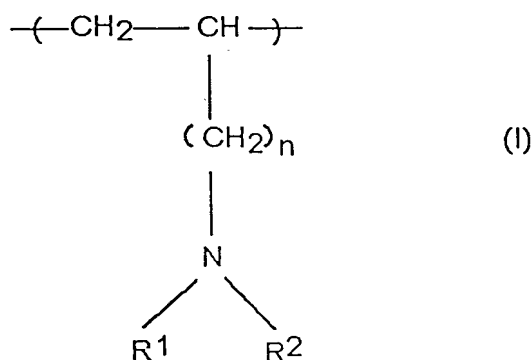
X represents a hydrogen or halogen atom; and

Y<sup>1</sup> and Y<sup>2</sup> which may be the same or different represent an alkali metal atom ammonium, or a C<sub>1-5</sub> alkylammonium.

Claim 51. An ink jet recording method comprising the steps of: (a) providing an ink set of claim 50 and (b) depositing droplets of each of the black, yellow, cyan and magenta inks of the ink set onto a recording medium to form an image on the recording medium.

Claim 52. An ink composition comprising an alkali-soluble colorant, a water-soluble organic solvent, water, and a cationic, water-soluble resin,

the cationic, water-soluble resin comprising a repeating unit represented by the following formula (I):



wherein R<sup>1</sup> and R<sup>2</sup> which may be the same or different represent a hydrogen atom or a C<sub>1-5</sub> alkyl group, provided that R<sup>1</sup> and R<sup>2</sup> do not simultaneously represent a hydrogen

Cl  
cont.  
atom; and

n is 1.

Claim 53. The ink composition according to claim 52, wherein the cationic, water-soluble resin has an average molecular weight of 300 to 10,000.

Claim 54. The ink composition according to claim 52, wherein the cationic, water-soluble resin is an acid addition salt.

Claim 55. The ink composition according to claim 52, which further comprises a base.

Claim 56. The ink composition according to claim 52, wherein the base is a hydroxide of an alkali metal or an alkaline earth metal.

Claim 57. The ink composition according to claim 52, wherein both  $R_1$  and  $R_2$  in the repeating unit represented by the formula (I) represent a methyl group.

Claim 58. The ink composition according to claim 52, wherein the water-soluble organic solvent has a lower vapor pressure than water.

Claim 59. The ink composition according to claim 52, wherein the water-soluble organic solvent is contained in an amount of 5 to 50% by weight based on the total



amount of the ink.

CI  
Cont.  
Claim 60. The ink composition according to claim 52, wherein the colorant is a dye or a pigment.

Claim 61. The ink composition according to claim 52, which further comprises a nonionic, water-soluble resin.

Claim 62. An ink set comprising a first ink composition or a group of first ink compositions and a second ink composition or a group of second ink compositions, the first ink composition being the ink composition according to claim 52, the second ink composition being an ink composition comprising an anionic material.

Claim 63. The ink set according to claim 62, wherein the group of first ink compositions comprises a yellow ink, a magenta ink, and a cyan ink and the second ink composition is a black ink.

Claim 64. The ink set according to claim 62, wherein the first ink composition is a black ink and the second group of ink compositions comprises a yellow ink, a magenta ink, and a cyan ink.

Claim 65. The ink set according to claim 62, wherein the anionic material

C1  
cont.  
contained in the second ink composition is an anionic, water-soluble resin.

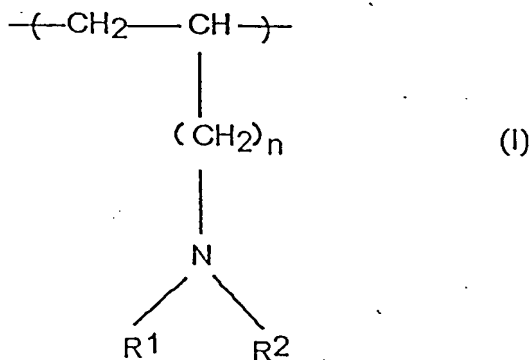
Claim 66. The ink set according to claim 65, wherein the second ink composition comprises a pigment.

Claim 67. The ink set according to claim 62, wherein the anionic material in the second ink composition is a pigment having an anionic, functional group on its surface.

Claim 68. A recording method comprising the step of: depositing an ink composition according to claim 52 onto a recording medium to form an image on the recording medium.

Claim 69. An ink set comprising a black ink, a yellow ink, a cyan ink, and a magenta ink, said black, yellow, cyan, and magenta inks each independently comprising an alkali-soluble colorant, a water-soluble organic solvent, water, and a cationic, water-soluble resin,

the cationic, water-soluble resin comprising a repeating unit represented by the following formula (I):



C1  
cont.

wherein  $R^1$  and  $R^2$  which may be the same or different represent a hydrogen atom or a  $C_{1-5}$  alkyl group, provided that  $R^1$  and  $R^2$  do not simultaneously represent a hydrogen atom; and

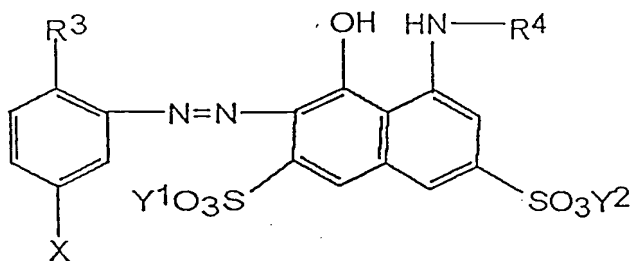
$n$  is 1,

the black ink comprising a colorant selected from the group of dyes consisting of C.I. Direct Black 19, 35, 154, 168, 171, and 195 and C.I. Food Black 2,

the yellow ink comprising a colorant selected from the group of dyes consisting of C.I. Direct Yellow 50, 55, 86, 132, 142, and 144 and C.I. Acid Yellow 23,

the cyan ink comprising a colorant selected from the group of dyes consisting of C.I. Direct Blue 86, 87, and 199 and C.I. Acid Blue 9 and 249,

the magenta ink comprising a colorant selected from the group of dyes consisting of C.I. Direct Red 9 and 227, C.I. Acid Red 52 and 289, and dyes represented by the following structural formula (II):



(II)

wherein  $R^3$  and  $R^4$  represent a hydrogen atom, a  $C_{1-5}$  alkyl group, an aryl group, a  $C_{1-5}$  alkoxy group, or a phenoxy group or a derivative thereof, a triazine ring or a derivative thereof, a carboxyl group or a salt thereof, or a sulfonyl group or a

derivative thereof;

X represents a hydrogen or halogen atom; and

Y<sup>1</sup> and Y<sup>2</sup> which may be the same or different represent an alkali metal atom ammonium, or a C<sub>1-5</sub> alkylammonium.

Claim 70. An ink jet recording method comprising the steps of: (a) providing an ink set of claim 69 and (b) depositing droplets of each of the black, yellow, cyan and magenta inks of the ink set onto a recording medium to form an image on the recording medium.

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